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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,783	07/21/2006	Kunihiko Kanai	90516/PRC	3161

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EXAMINER	
TEJANO, DWIGHT ALEX C	
ART UNIT	**PAPER NUMBER**
4112	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,783	KANAI ET AL.	
	Examiner	Art Unit	
	Dwight Alex C. Tejano	4112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☒ Claim(s) *1-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 June 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *21 Jul 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to because there is a misspelling present in the y-axis label of Fig. 13A ("lalue" [sic.]) Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear or inexact terms used in the specification are:

- The term “focal length detecting” as it stands is reasonably interpreted as simply acquiring the focal length of the current position of the camera. However, the present application is more involved with the determination or adjustment of the proper focal position.
- The phrase “in response to a specified value, being a variable, according to image capture conditions” (cl. 3) can quite literally mean any value that changes based on the image being detected – from detected changes in intensity to the incremental “number of photos taken” counter on the camera.
- It is unclear how any “value” differs from the “evaluated values” (which further seems differentiated from “contrast evaluated values”) mentioned throughout the application. All of these terms seem interchangeable as being values extracted from the image in the frequency domain, but then the reason why they would need to be differentiated at all is unclear.

These are only three examples of problems found within the disclosure. The Applicant is advised to review the specification and take appropriate action as required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 6, 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Muramoto (US 5,915,047.)

Note 1: The claims in the present application are both so broad and so unclear that the precise meets and bounds of their limitations were unable to be fully determined with respect to the prior art. The assumptions and determinations made in order to define the claim limitations more clearly with respect to the art are listed.

Note 2: The term "focal length detecting method" is understood and interpreted as "focal length determining method," as the term "detecting" implies the extraction of the focal length of a current position of the imaging apparatus, as opposed to the *determination* of a proper focal position in order to minimize moiré and maximize image clarity.

Note 3: The term "contrast evaluated value" is understood and interpreted as a simple "value" in the frequency domain. In the present application, the "contrast evaluated value" listed in the figures is simply the y-axis label for frequency domain analysis.

Regarding **claim 1**, Muramoto discloses an image capture device with a moiré detecting circuit.

In the system, Muramoto inherently discloses the acquiring a plurality of image data while changing the focal length of an optical system. Muramoto discloses that his system "moves the photographic lens and checks to what extent the lower-frequency range varies." By this practice, it is inherent that Muramoto's system must acquire a plurality of image data as the lens moves back and forth (changing the focal length) in order to evaluate a variation of any kind. Therefore, this acquiring step is inherently disclosed by Muramoto. (c. 3, l. 65 – c. 4, l. 3)

Additionally, Muramoto discloses the acquiring high frequency values and low frequency values from their respective frequency levels. Figs. 3, 4a, and 4b disclose the extraction of luminance and frequency information in Muramoto's system. However, Muramoto also describes the extraction of high frequencies and low frequencies from the signal through high (16) and low (13) pass filters, respectively (c. 3, l. 56 – 63)

Furthermore, Muramoto discloses the extraction of a peak value of the high frequencies from the high pass filters (c. 3, l. 59 – 61) and further discloses that the data is used to determine the presence of moiré (c. 4, l. 4 – 11.)

Moreover, Muramoto inherently discloses the making the first focal length the image capture focal length if there is no moiré. Muramoto discloses that the system continues to find the proper focal position when the predetermined ratio is exceeded ("[if the] moiré exceeds allowable limit… [then the] lens is inhibited from stopping.") It,

therefore, inherent follows that if the original in-focus position does not exceed the error ratio, then that first position does not move and is set as the proper focal position (c. 4, l. 9 – 11.)

Finally, Muramoto discloses the comparing of the low frequency with the high frequency values and the selection of the proper focal position when it is less than a predetermined value. Muramoto discloses the comparison of low frequency and high frequency values by generating the ratio, $\Delta S_L/\Delta S_H$, as a ratio is an inherent comparison between two values. Furthermore, similar to above, Muramoto inherently discloses the selection of a proper focal position when the moiré no longer exceeds the given ratio, as the position is set once the in-focus position no longer exceeds the ratio (c. 4, l. 1 – 11.)

Regarding **claim 2**, Muramoto discloses everything as described in claim 1, as described above, further disclosing the proportion of low frequency values and high frequency values in the ratio, $\Delta S_L/\Delta S_H$, as mentioned previously. Furthermore, Muramoto discloses an inherent subtraction of the low frequency from high frequency values through the use of a low-pass filter (13) and a high-pass filter (16) as both filters inherently subtracts anything above a given threshold – that is, either subtracting the lows from the highs or the highs from the lows.

Regarding **claim 3**, Muramoto discloses everything present in claim 2, as described above. Furthermore, the term “reference evaluated value” is assumed to mean the threshold value that determines the satisfactory minimum moiré position.

Given that, Muramoto inherently has this value because, as described above, the filters produce a value where the frequencies are subtracted from one another, and Muramoto uses those frequencies to determine the threshold ratio, $\Delta S_L/\Delta S_H$.

Furthermore, the term "a specified value" is extremely broad and can encompass any value that changes according to image conditions. In this case, the specified value is assumed to mean the moiré detection threshold, which is the ratio $\Delta S_L/\Delta S_H$ in Muramoto. Muramoto inherently discloses the adjustment according to that ratio dependent on some image capture condition.

The frequency domain representation of an image would be different from any other image being evaluated because a different amount of the image signal could be let through to the image sensor at any given time (i.e., zoom, macro focus, etc.) It follows then that this adjusts how much power of the frequency spectrum falls within the passbands of the high-pass and low pass filters, which, in turn, changes ΔS_L and ΔS_H. This process logically follows further that the change in ΔS_L and ΔS_H modify the threshold ratio accordingly – that is, the threshold becomes more or less sensitive depending on the amount of light being passed through. This reads upon the limitation of a value that varies according to image capture conditions.

Regarding **claim 4,** Muramoto reads upon everything in claim 3, as disclosed above. Muramoto inherently discloses the limitation that as the depth of field becomes larger the specified value becomes larger. As presented in claim 3, the amount of ambient light changes the ratio that is used to determine the allowed threshold for

moiré. By Muramoto's disclosure, high frequency changes have a much more significant effect in power than low frequency changes (c. 3, l. 41 – 47; Fig. 3, 4A, 4B.) Because the change in high frequencies is more significant, the placement of ΔS_H in the denominator of the ratio means that the high frequencies have the most weight in adjusting that ratio.

As the depth of field becomes larger (i.e., zoom out), the change in ΔS_H becomes less and less significant, and the threshold for moiré error (ratio) becomes larger.

Regarding **claim 5,** Muramoto discloses everything in claim 1, as discussed above. Further, Muramoto inherently discloses that a focal length is selected when a the high frequency component matches a reference value. As mentioned previously, the focal length changes to adjust for moiré when $\Delta S_L/\Delta S_H$ exceeds a predetermined value (c. 4, l. 4 – 11); however, if ratio is not exceeded, then the moiré exists within an allowable limit, and the camera remains at its current focal length. This encompasses the situation when the high frequency components create a $\Delta S_L/\Delta S_H$ that exactly matches the threshold (reference value.)

Regarding **claim 6,** Muramoto discloses everything in claim 1, as mentioned previously. Further, Muramoto discloses a detection of moiré by varying the high frequency and low frequency components by varying the focal length of the optical system (Fig. 4, c. 3, l. 27 – 55.)

Claim 8 is an inherent apparatus variation of the claim 1. It is thus interpreted and rejected for the same reasons as presented previously.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muramoto in view of Nishigaki, et al. (US 2001/0028729)

Regarding **claim 7,** Muramoto teaches everything as disclosed in claim 1, as expressed previously. Muramoto, however, fails to disclose setting a plurality of image detection regions adjacent to one another, the calculation of a reliability rating based on the data received, or the selection of a proper focal position ("first focal length from among the partial focal lengths and a specific focal length.") Despite this, the Examiner maintains that these are practices that are well known in the art, as taught by Nishigaki, et al. (hereafter referred to as "Nishigaki.")

In a related art regarding object recognition, Nishigaki discloses the segmentation of an image by setting a plurality of image detection regions adjacent to one another (Fig. 3b.) Furthermore, Nishigaki discloses the calculation of a preliminary

focal position [0076] and the calculation of a reliability value ("validity") according to movement of a position where respective peak values are recorded between the pluralities of image data (Fig. 9.)

Therefore, it would be obvious to one of ordinary skill in the art to combine the teachings of Muramoto with Nishigaki as the image pickup apparatus of Muramoto would be a well-placed image capture device for use with Nishigaki's object recognition system. By Nishigaki's admission, two dimensional CCD cameras are easily adapted into the object recognition system [0044.] Muramoto's system would be specifically useful with combining with Nishigaki as the moiré reduction in Muramoto effects would increase the clustering accuracy in Nishigaki and prevent false positives when grouping sections together.

Despite all of this, the combination of Muramoto and Nishigaki fails to disclose the selection of a proper focal position in response to the reliability and the peak values. However, considering that the reliability value is a simple value that denotes focal accuracy, it would be logical and obvious to one of ordinary skill in the art to select a focal position based on the highest focal accuracy possible.

Citation of Pertinent Art

The prior art made of record is considered pertinent to the applicant's disclosure, but is not relied upon as a reference for the preceding sections:

- Yamada, et al. (US 5,995,137) discloses an image pickup apparatus with peak detection and differentiating circuits.
- Okada, et al. (US 5,969,757) discloses a imaging apparatus with moiré-detecting and moiré-removing means

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwight Alex C. Tejano whose telephone number is (571) 270-7200. The examiner can normally be reached on Monday through Friday 9:30-6:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jefferey F. Harold can be reached on (571) 272-7519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dwight Alex C Tejano
Examiner
Art Unit 4112

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